Swift data access

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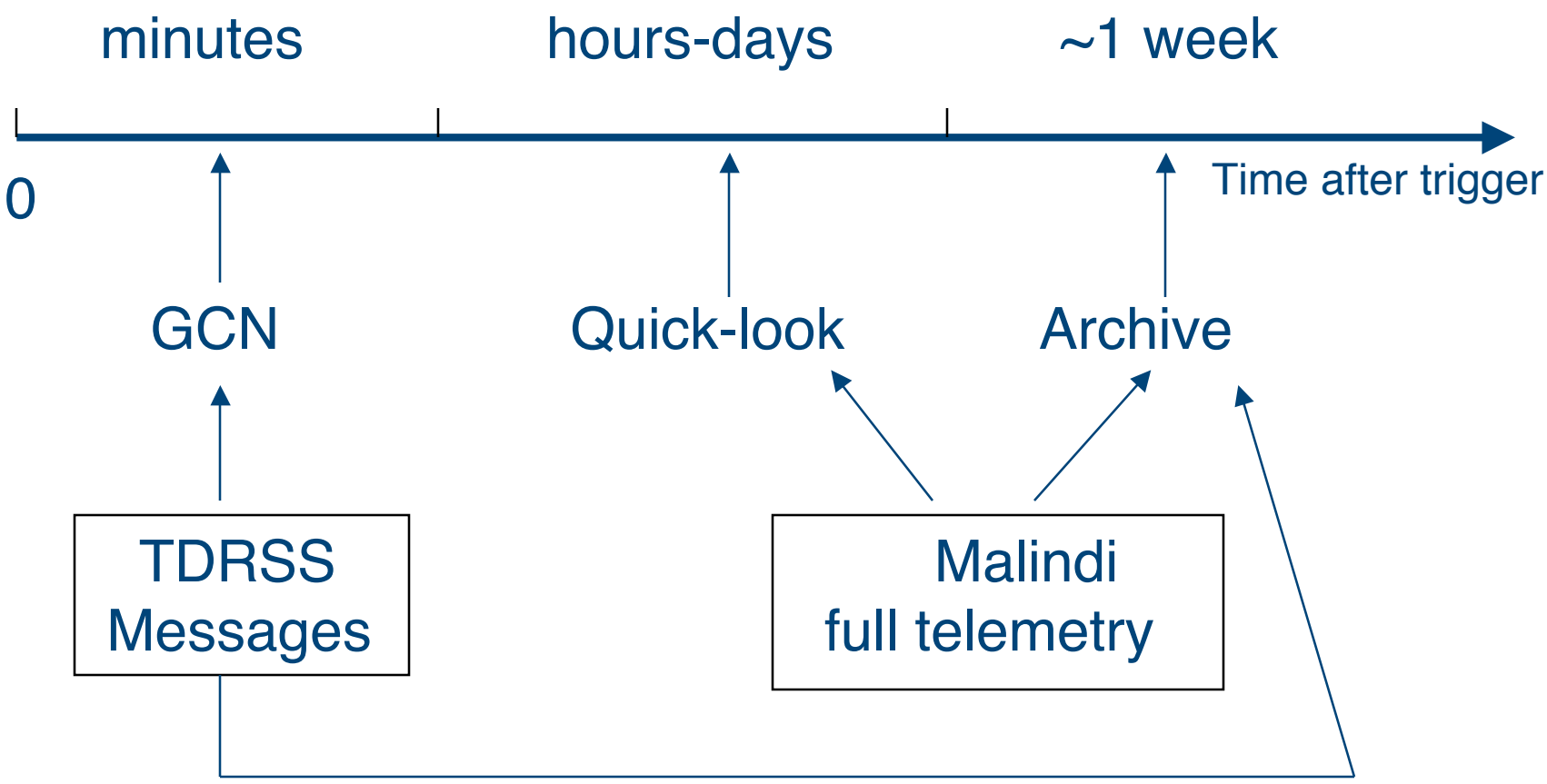
HEASARC

Outline

- Data access
  - When the data are available
  - Where the data are available
  - What data are available
- Calibration data & distribution
- Software distribution
- Contributed data : AKBAR system

Watch the life of a GRB unfold in "quasi" real time

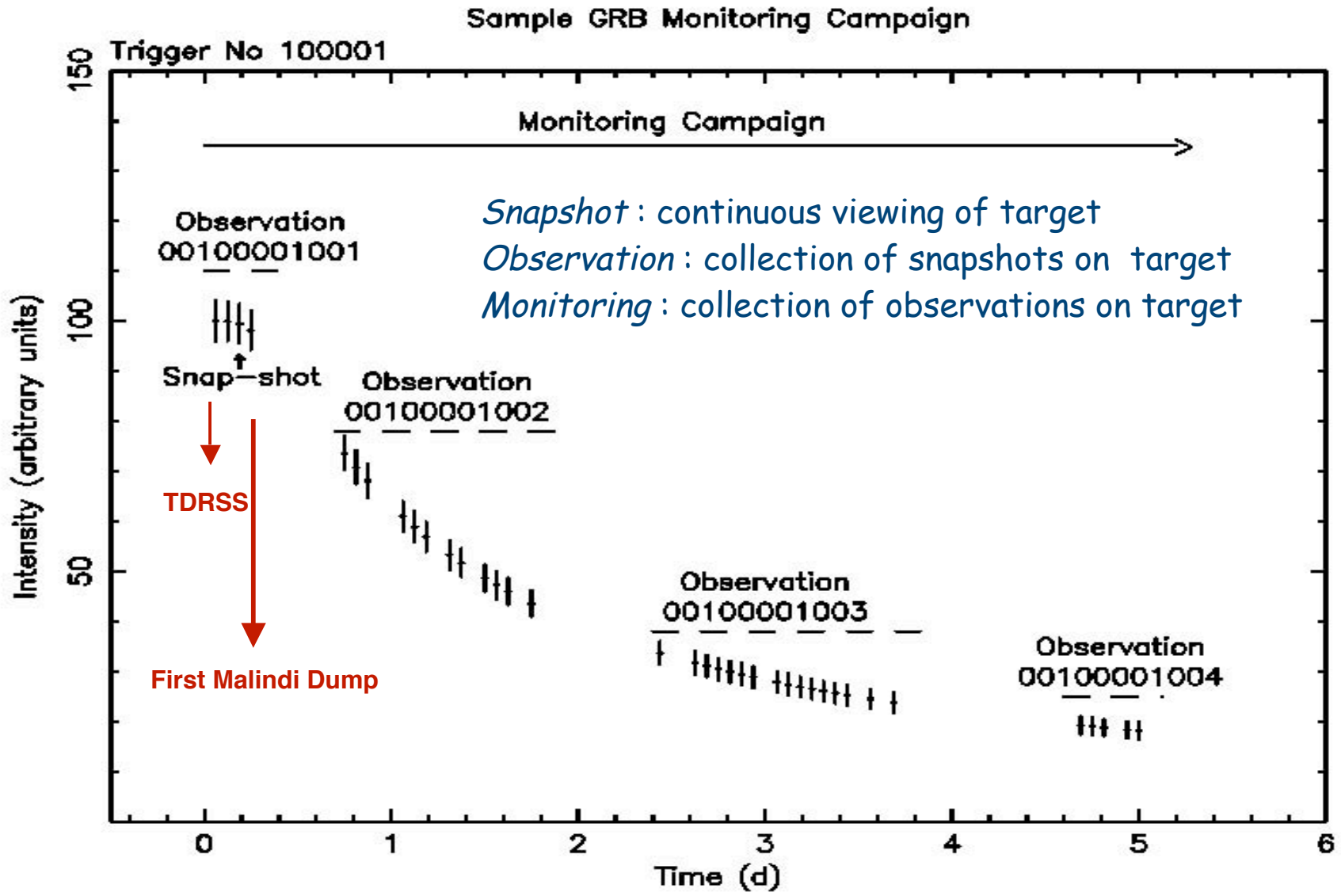
When / Where /What



When data are available

- Data are downloaded via :
  - TDRSS. Series of messages after a trigger is detected on board.
    - broadcast via the GCN (minutes)
    - later archived as part of the final Swift archive (< a week)
  - Malindi. All the telemetry. About 6 -7 download per day
- Two processing types of the Malindi data (same pipeline software)
  - Quick look:
    - Data processed every Malindi dump, e.g. the same observation is re-processed when new data arrive.
    - Data public in few hours after each dump (from the SDC).
  - Permanent archive:
    - Final processing after all telemetry for an observation is available (~ a week)
- No proprietary period for data except for the activation and verification phase (~4.5 months) where data are encrypted

GRB Observations



Snapshot : continuous viewing of target

Observation : collection of snapshots on target

Monitoring : collection of observations on target

Where data are available

TDRSS messages via GCN.

- Subscribe to the GCN: instructions at
  http://gcn.gsfc.nasa.gov/invitation.html

Malindi data : Quick-look area

http://swift.gsfc.nasa.gov/cgi-bin/sdc/ql?

Malindi data : Archive three sites host the Swift data

http://heasarc.gsfc.nasa.gov	in USA
http://swift.asdc.asi.it	in Italy
http://www.src.le.ac.uk/projects/swift	in UK

* Data will be encrypted during the verification phase

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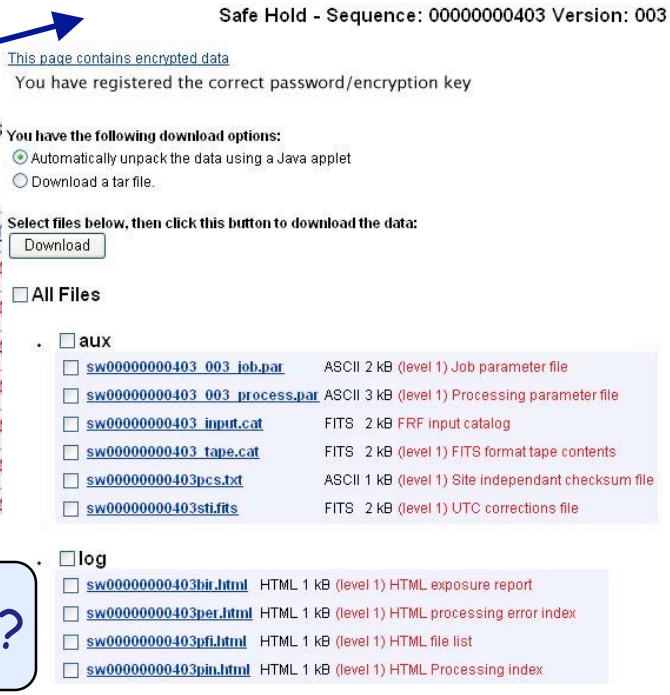
Swift Quick-look interface

Sequence	Version	Object	Observed	Processed	Comm
0000000040	003	Safe Hold	2004-08-28T03:52:58	2004-08-29	new data: moc2004
00000001304	010	Safe Pointing 1	2005-12-19T15:59:05	2004-08-15	new data: moc2004
00000001322	001	Safe Pointing 1	2004-08-26T01:01:08	2004-08-26	new data: moc2004
00000002273	061	Safe Pointing 2	2005-12-19T16:33:27	2004-08-15	new data: moc2004
00000002295	001	Safe Pointing 2	2004-08-25T23:52:27	2004-08-26	new data: moc2004
00000003306	001	Safe Pointing 3	2004-08-26T00:29:58	2004-08-26	new data: moc2004
00000004323	005	Safe Pointing 4	2004-08-25T01:14:36	2004-08-26	new data: moc2004



Capability to select :

- File
- Directory
- Everything

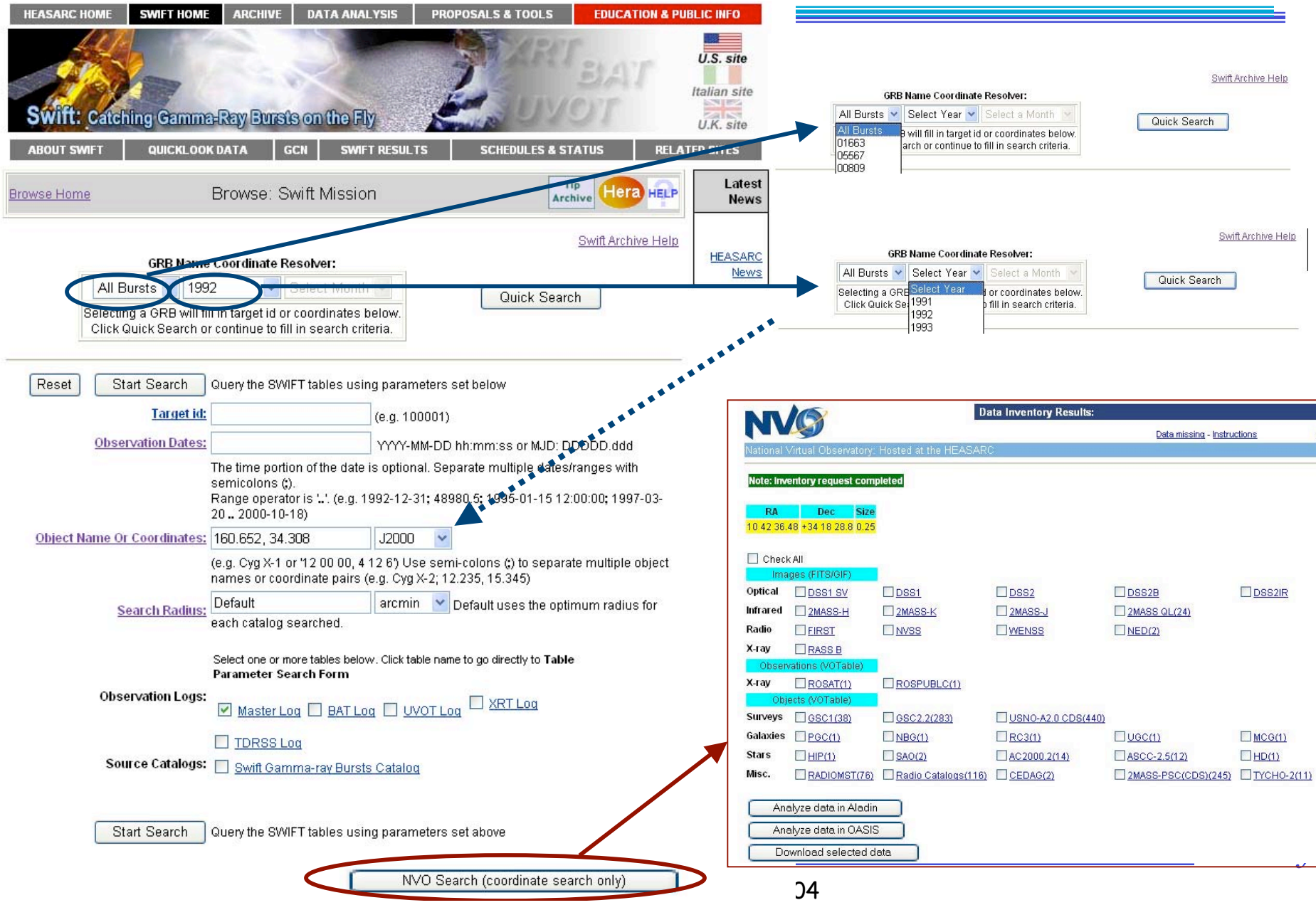
Download a tar file

http://swift.gsfc.nasa.gov/cgi-bin/sdc/ql?

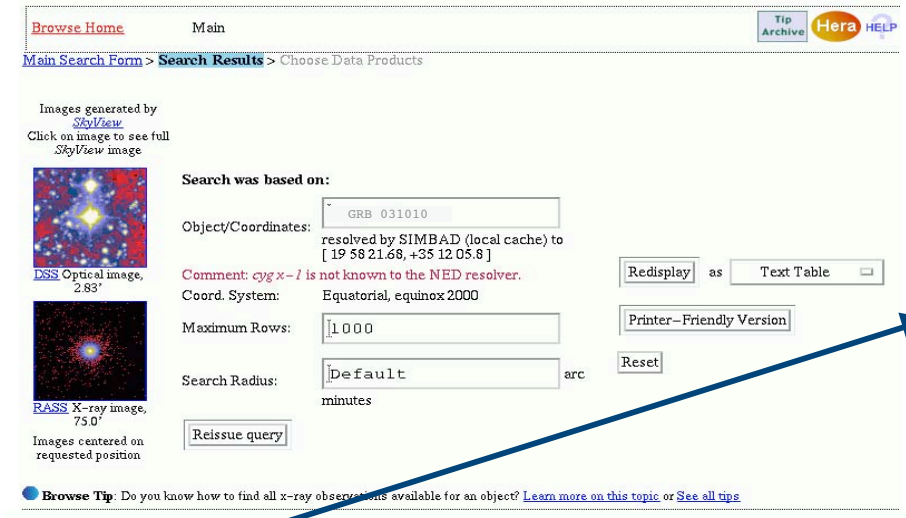
Swift archive access interfaces

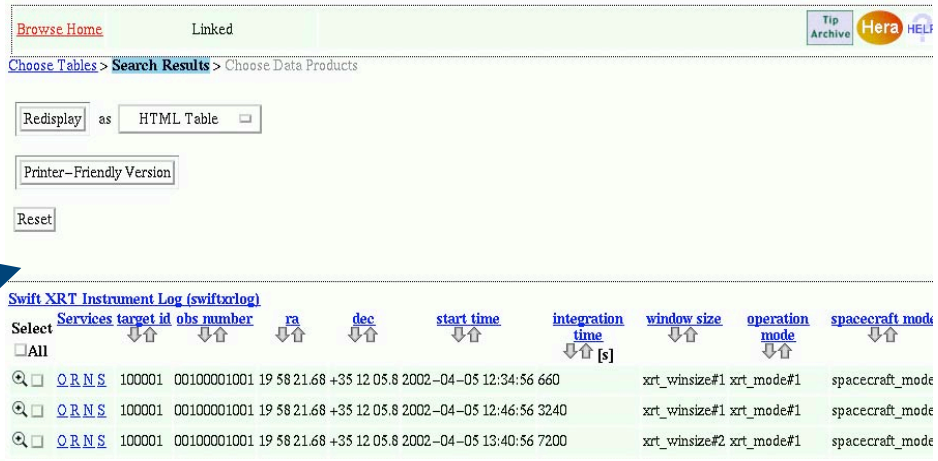
- HEASARC Browse
- Dedicated Swift archive access page :
  - It is a front end to the HEASARC Browse
  - Easy way to get data via GRB name resolver
  - Post news on the archive
  - Link to the other Swift archive DC, Quick look area & the GCN
  - Initiate an NVO query
  - Query outputs from Browse and the Swift archive page will be identical
- Anonymous FTP (ftp://heasarc.gsfc.nasa.gov/swift)

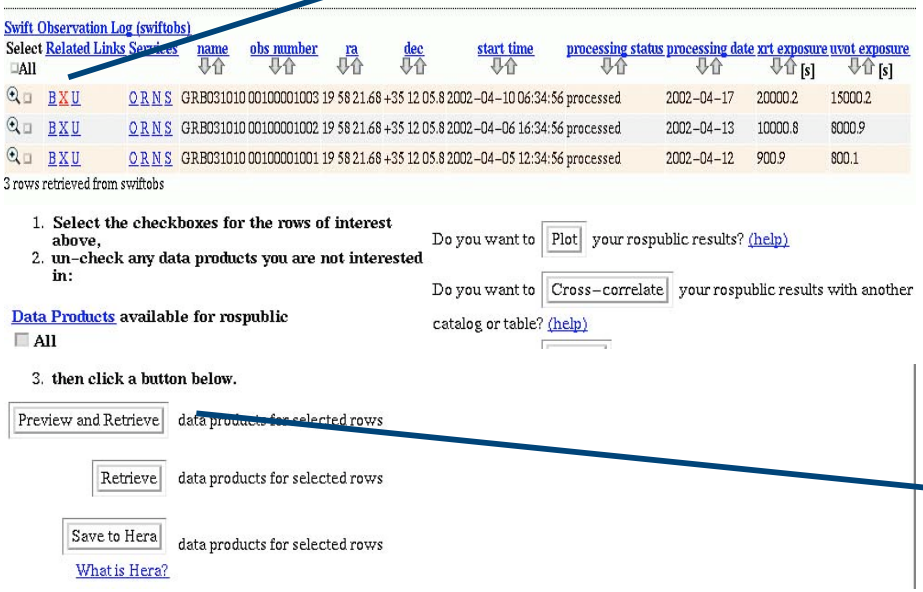
Swift archive interface (1)



Swift archive interface (2)







What data are available

- **Swift data from standard processing (SDC) includes :**
  - —Level 1,2,3 production data (by observation)
  - —TDRSS messages
  - —Trend and Monitoring data
  - Populate the archive from the start (weekly delivery)

    Available from the Quick-look & GCN area in the meantime

- **GRB Summary data products**
  - archived on a routine basis 5 months after launch

- **Surveys : XRT (ISAC), BAT (BAT team), UVOT (MSSL)**
  - Populate the archive not earlier than 1 yr into the mission with updates at least every 6 months

Data within an observation

	Level 1	Level 1a	Level 2
Event	XRT,UVOT, BAT*	XRT	XRT,UVOT BAT
Image	XRT, UVOT	UVOT	XRT,UVOT
Rates	BAT		
MaskTag	BAT		BAT
Survey	BAT		BAT
Housekeeping	XRT,UVOT, BAT		

* Only when detecting a burst

- Level 1 reformatted data in FITS with minimum processing
- Level 1a intermediate file
- Level 2 calibrated and screened using standard parameters

Level 3 high level products :

- Light curves, spectra and images (Fits) of the target
  - Each instrument produces specific set depending on the data mode
- GIF view of individual or combination of level 3 Fits products

TDRSS messages

For a given alert the following possible messages will be generated on board :

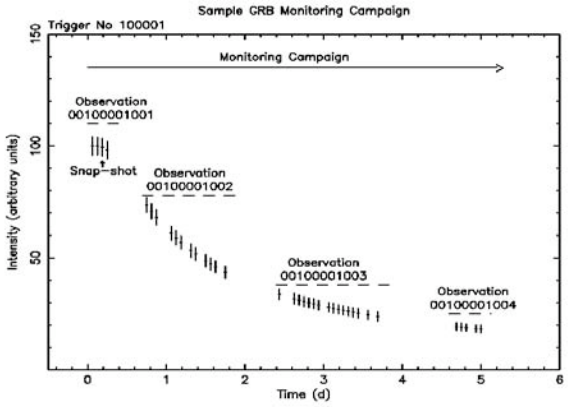
- BAT alert
- BAT ACK position
- BAT Nack no position
- FOM FOM will/will not AT
- FOM S/C will/will not AT
- BAT lightcurve
- XRT position
- XRT spectrum *
- XRT image*
- UVOT Finding chart *
- XRT centroid error
- UVOT subimage centered on the XRT position *
- BAT Scaled map

Broad-casted first via the GCN & later archived at the HEASARC & other archives

The * indicates that some ground processing is required before distribution

GRB summary products

- Put together after the afterglow faded away and organized by GRB
- Intended to give an overview & main characteristics of the GRB/afterglow
- Linked to the Swift GRB catalog



  - Derived from the original Swift data
  - Characteristic light curve, spectra and images
  - Or linked to existing products from the main processing
  - Manually checked
  - All data products are FITS and preview summary as GIF (packaged in a HTML file)

Calibration data & CALDB

- Swift Calibration data are stored in the Calibration Database (CALDB)
  - CALDB consists of data files containing either original measurements or derived products
  - CALDB is used by the reduction software
  - Updates in calibration files do not require software changes
- Swift CALDB files are generated by the Instrument Team:
  - delivered to the SSC and archived in CALDB by the HEASARC
- CALDB is available from the HEASARC FTP area and it can be:
  - Downloaded and Installed locally
  - Accessed remotely
- Dedicated Swift CALDB web page for information and data.

Calibration information access

Current CALDB release page automatically generated at ingest time

Swift Calibration Files

This page contains a summary of the Swift Calibration files which are currently in the Swift Calibration Database (CALDB). For each instrument, each table links describing latest CALDB release and previous CALDB releases. The tables also contain links to the current CALDB data which users can install on their local machines, and other useful files.

For information about installing the CALDB for Swift or other missions, see the CALDB Installation page. Note that the *easiest way* to access calibration data for Swift or other HEASARC-supported missions is via remote access.

BAT Calibration Products

Item	Date	Comments
Current CalDB Release	2004-05-26	
Previous CalDB Releases	2004-05-26	
Documentation	2004-05-26	
Retrieve TAR file		WARNING: Large file!
Response Matrix	2004-05-26	
Mask	2004-05-26	

XRT Calibration Products

Item	Date	Comments
Current CalDB Release	2004-05-26	
Previous CalDB Releases	2004-05-26	
Documentation	2004-05-26	
Retrieve TAR file		WARNING: Large file!

UVOT Calibration Products

Item	Date	Comments
Current CalDB Release	2004-07-07	Updated
Previous CalDB Releases	2004-05-26	Updated
Documentation	2004-05-26	
Retrieve TAR file		WARNING: Large file!

Swift CALDB >> SWIFT UVOT Calibration Files: 20040702

SWIFT UVOT Calibration Files: 20040702

The CALDB Index File describes the contents of each CalDB file.

Release Notes SWIFT_UVOT_20040702.txt

CALDB File	CALDB Quality	Last Updated	CODE	Description
swubadpix20010101v001.fits	0	2004-07-02	BPTABLE	UVOTA BAD PIXELS, COLUMNS, & ROWS
swucntcor20010101v000.fits	0	2004-07-02	COINCIDENCE	COINCIDENCE LOSS CORRECTION
swueffarea20010101v000.fits	0	2004-07-02	EFFAREA	UVOT MIRROR ON-AXIS EFFECTIVE AREA
swulss20010101v000.fits	0	2004-07-02	SKYFLAT	LARGE SCALE SENSITIVITY OF UVOTA DETECTOR
swup2p20010101v000.fits	0	2004-07-02	LED	LED ILLUMINATION MAP
			TRANS	UVOTA MAGNIFIER TRANSMISSION
			RISMEQ	UVOTA UV GRISM EQUATION
			OLORTABLE	COLOR TRANSFORMATION COEFFICIENTS
			ET_POSCOR	NONLINEAR DISTORTION CORRECTIONS
			PECRESP	UVOTA UVW1 FILTER SPECTRAL RESPONSE

All information from a single page :

-current & previous CALDB releases

- documentation & essential files

First release by launch

http://heasarc.gsfc.nasa.gov/docs/heasarc/caldb/swift

Software distribution

Binary Distribution of the HEASOFT Software

The binary distribution consists of precompiled HEAsoft software which can be run almost as soon as they are downloaded... some assembly is required. (See the INSTALL.BINARY file included in the package.) You need to select which computer system you are using and then which subpackages you want to download.

STEP 1 - Select your system:

- Linux (PC)
- Linux (Mac)
- IRIX
- Solaris
- OSF
- Cygwin (see Important Note)
- Mac OS X 10.2.x (Jaguar)
- Mac OS X 10.3.x (Panther)

- FTOOLS 4.2 for Windows
- SunOS 4 and HPUX 10 support has been dropped.

STEP 2 - Download the desired packages:

If you experience problems using FTP to download this software, click here. Alternatively, you may use your web browser to navigate our FTP directory by clicking here. Click on the package names below for more information about a given package.

A - For Swift data analysis, you MUST have HEASOFT 5.3.1. Select one of the following 2 options:

- If you already have **HEASOFT 5.3.1**:

  download - *Contains the Swift software only*

- If you do **not** already have **HEASOFT 5.3.1**:

  download - *Contains the Swift software and all of HEASOFT 5.3.1 (includes the complete FTOOLS, XANADU, & XSTAR)*

- Swift software is written following the FTOOLS paradigm & distributed as one of the HEAsoft components

- The Swift software development teams deliver software to the SSC for testing. The SSC then delivers to the HEASARC for distribution

- It now includes :
  - 49 separate tasks specific to the BAT, XRT, UVOT data & 6 shared among the instruments
  - The Swift data reduction re-uses many of the tasks already present in HEAsoft

- Source code and Binary distributions from http;//heasarc.gsfc.nasa.gov/docs/software

First release by launch , together with test data

Contributed data

- Swift GRBs will be followed by other observatories
- Recording the results from these observations will :
  - Help planning future Swift observations
  - Add value to the Swift data
  - Organized database for afterglow results

- AKBAR : Astrophysical Knowledge Base for Analysis and Reporting
  - Record results into pre-defined database table dedicated to a group
  - Web based user interface
  - Registration required
  - Input results are tagged into the database with the user ID
  - Links to external data
  - Allows to modify or discard table records if tagged by your User ID
  - Allows to search any records in the dedicated database.

AKBAR and Swift

- For Swift two databases have been implemented :
  - -Burst Advocate : to record key parameters of the GRB/afterglow derived from Swift data
  - -Swift Follow-up team member: to record results from other telescopes
- These databases will be made public on a regular base to be access via the Swift Browse interface.

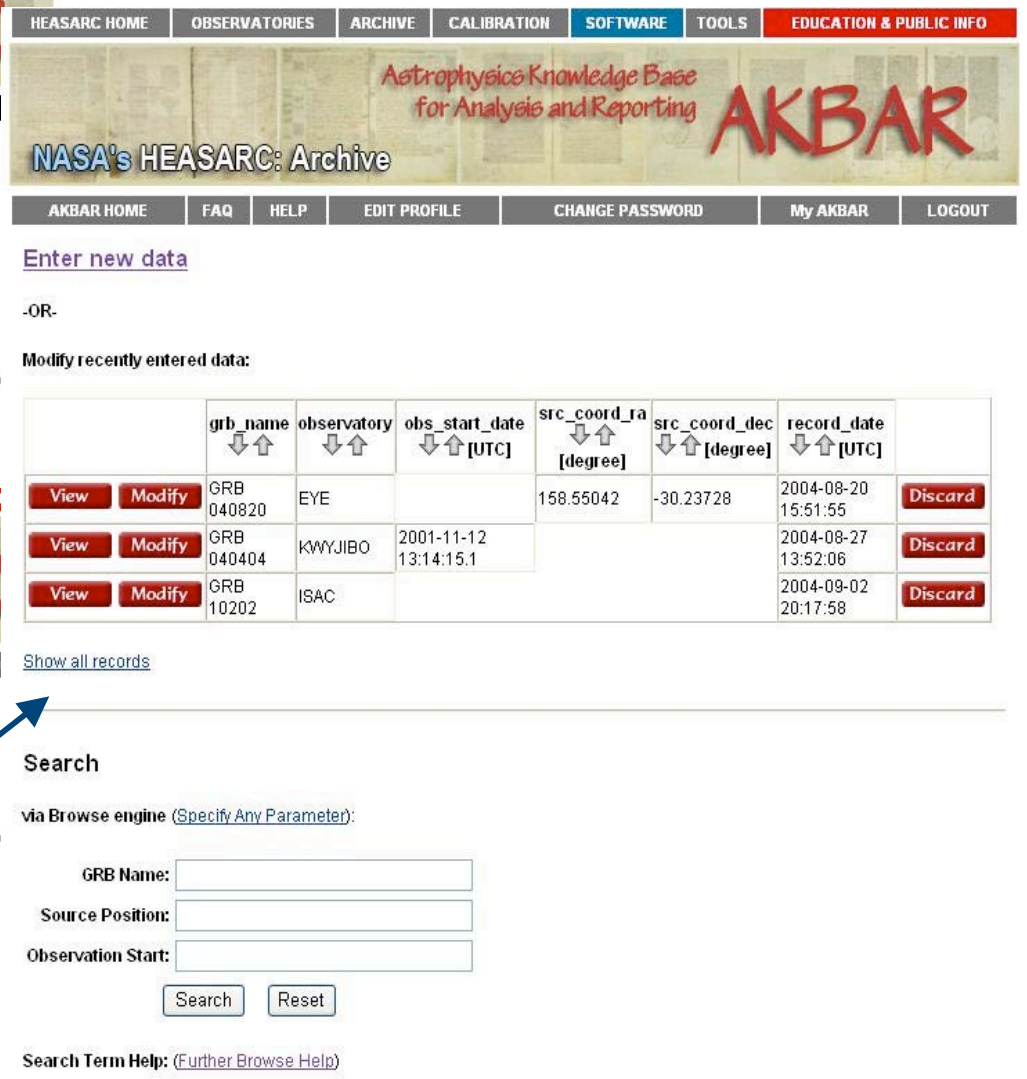
- User contributed groups are also possible. If you are interested see:

  http://heasarc.gsfc.nasa.gov/akbar

Akbar


HEASARC HOME
OBSERVATORIES
ARCHIVE
CALIBRATION
SOFTWARE
TOOLS
EDUCATION & PUBLIC INFO
Astrophysics Knowledge Base for Analysis and Reporting
AKBAR
NASA's HEASARC: Archive
AKBAR HOME
FAQ
HELP
User ID:
Password:
Login
Forgot User ID?
Forgot Password?
Request an account...
For assistance please contact the AKBAR Help Desk


HEASARC HOME
OBSERVATORIES
ARCHIVE
CALIBRATION
SOFTWARE
TOOLS
Astrophysics Knowledge Base for Analysis and Reporting
AKBAR
NASA's HEASARC: Archive
AKBAR HOME
FAQ
HELP
EDIT PROFILE
CHANGE PASSWORD
My AKBAR
Hello, DR. PHILIP J FRY.
Our records show that you are a member of the following AKBAR groups:
Swift Follow-Up Team (SWIFTFUT)
For assistance please contact the AKBAR Help Desk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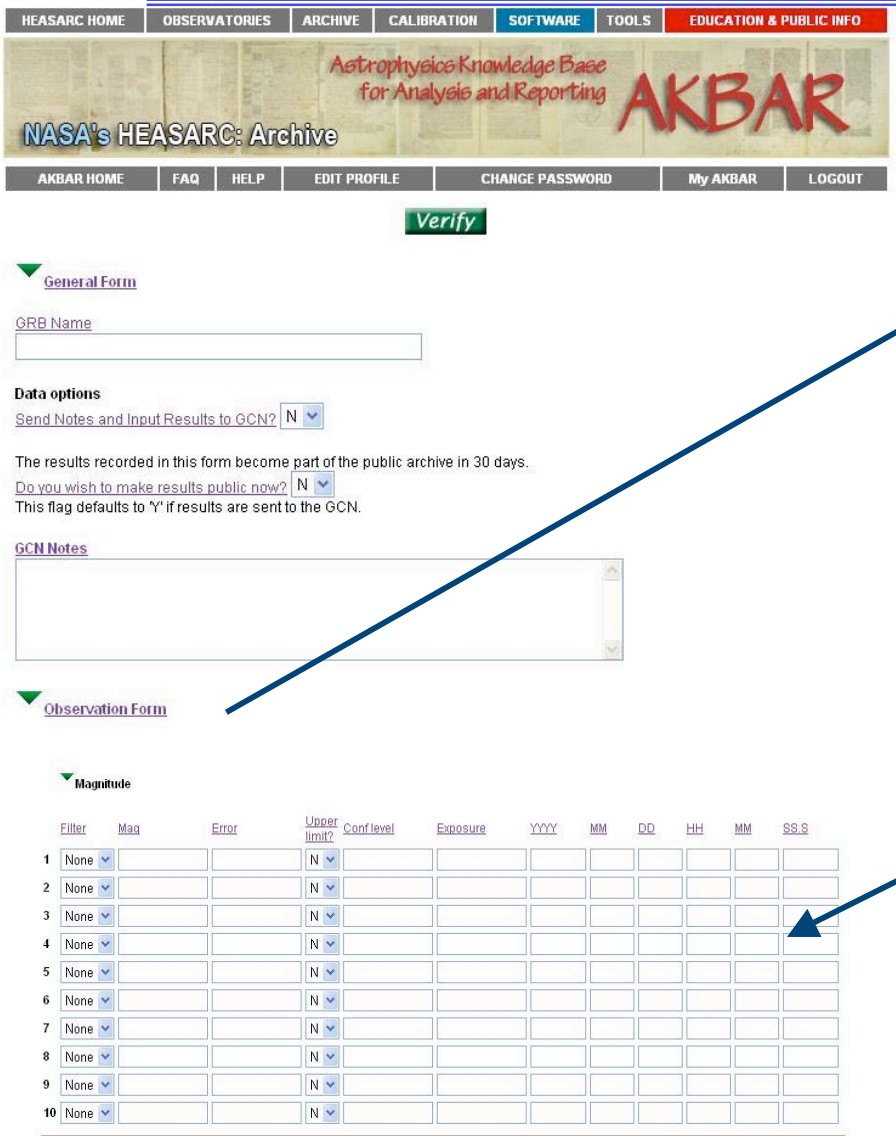
AKBAR
NASA's HEASARC: Archive
AKBAR HOME
FAQ
HELP
EDIT PROFILE
CHANGE PASSWORD
My AKBAR
LOGOUT
Enter new data
-OR-
Modify recently entered data:
grb_name
observatory
obs_start_date [UTC]
src_coord_ra [degree]
src_coord_dec [degree]
record_date [UTC]
View
Modify
GRB 040820
EYE
158.55042
-30.23728
2004-08-20 15:51:55
Discard
GRB 040404
KWYJIBO
2001-11-12 13:14:15.1
2004-08-27 13:52:06
GRB 10202
ISAC
2004-09-02 20:17:58
Show all records
Search
via Browse engine (Specify Any Parameter):
GRB Name:
Source Position:
Observation Start:
Search
Reset
Search Term Help: (Further Browse Help)

Akbar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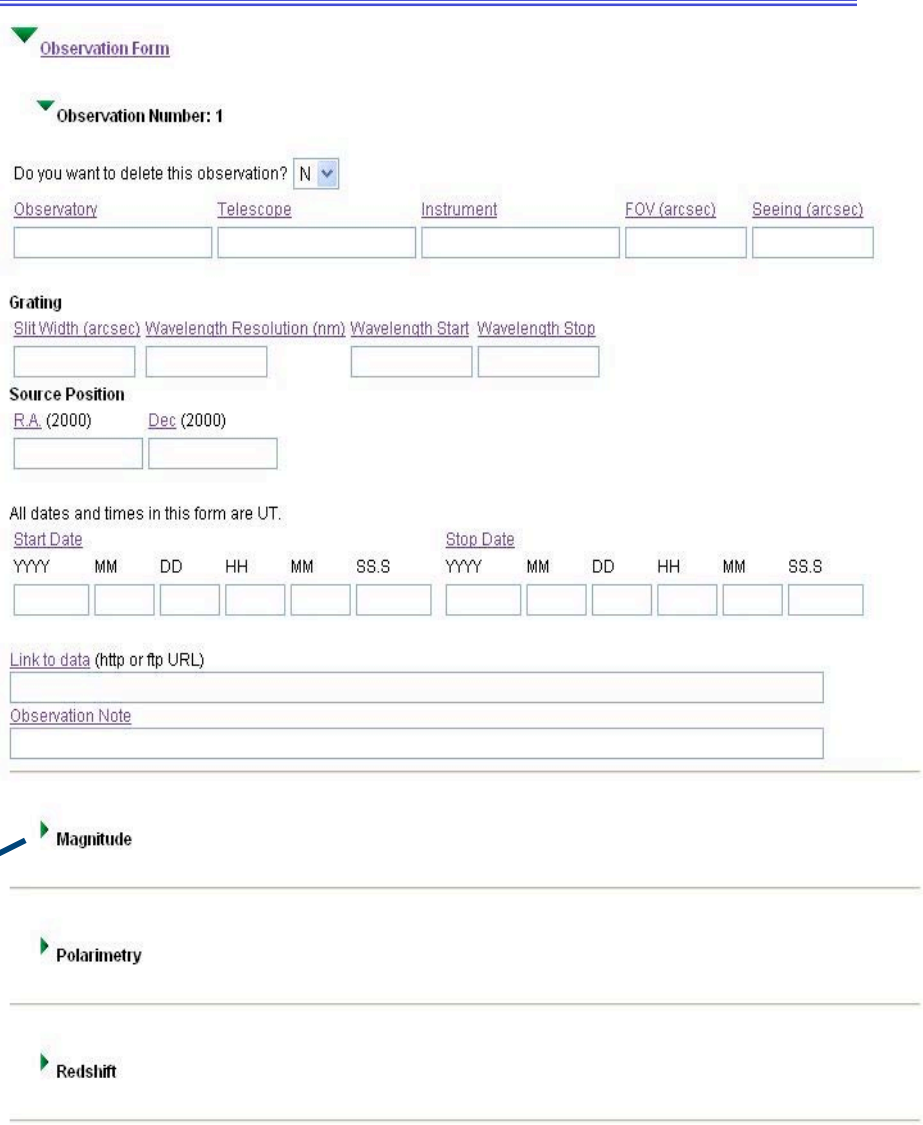
AKBAR HOME
FAQ
HELP
EDIT PROFILE
CHANGE PASSWORD
My AKBAR
LOGOUT
Verify
General Form
GRB Name
Data options
Send Notes and Input Results to GCN? N
The results recorded in this form become part of the public archive in 30 days.
Do you wish to make results public now? N
This flag defaults to 'Y' if results are sent to the GCN.
GCN Notes
Observation Form
Magnitude
Filter Mag Error Upper limit? Conf level Exposure YYYY MM DD HH MM SS.S
1 None N
2 None N
3 None N
4 None N
5 None N
6 None N
7 None N
8 None N
9 None N
10 None N


Observation Form
Observation Number: 1
Do you want to delete this observation? N
Observatory Telescope Instrument FOV (arcsec) Seeing (arcsec)
Grating
Slit Width (arcsec) Wavelength Resolution (nm) Wavelength Start Wavelength Stop
Source Position
R.A. (2000) Dec (2000)
All dates and times in this form are UT.
Start Date
Stop Date
YYYY MM DD HH MM SS.S YYYY MM DD HH MM SS.S
Link to data (http or ftp URL)
Observation Note
Magnitude
Polarimetry
Redshift